

U.S. Patent Application Serial No. 09/926,347
Amendment dated August 4, 2003
Reply to Office Action of February 3, 2003

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): An inspection apparatus comprising:

an inspection chip for inspecting a conductive pattern of a circuit board in a non-contact manner;

an insulative package mounting said inspection chip thereon with allowing an inspection surface of said inspection chip to be exposed out of said insulative package;

a chip-side bump electrode provided at each of electrode pads of said inspection chip;

a package-side bump electrode provided at a lead of said package;

an anisotropic conductor disposed to cover at least said chip-side bump electrode and said package-side bump electrode; and

a conductor layer located on said anisotropic conductor and extending at least in the range of said chip-side bump electrode to said package-side bump electrode, wherein said anisotropic conductor is thermo-compression bonded in between said conductor layer and said chip-side bump electrode and in between said conductor layer and said package-side bump electrode, so as to electrically connect said chip-side bump electrode with said package-side bump electrode through said conductor layer.

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Claim 2 (original): An inspection apparatus as defined in claim 1, wherein said package includes a recessed portion on the front surface side thereof, wherein said inspection chip is embeddedly mounted in said recessed portion.

Claim 3 (currently amended) An inspection apparatus as defined in claim 2, wherein said package has ~~a~~ an end face on the front surface side thereof approximately flush with said inspection surface of said inspection chip.

Claim 4 (original): An inspection apparatus as defined in claim 1, wherein said anisotropic conductor is disposed to extend from said chip-side bump electrode to said package-side bump electrode.

Claim 5 (original): An inspection apparatus as defined in claim 1, wherein said anisotropic conductor is disposed to approximately cover the entire front surface of said inspection chip.

Claim 6 (original): An inspection apparatus as defined in claim 1, wherein said conductor layer is composed of a conductor film formed in a planar shape and approximately in parallel with said inspection surface of said inspection chip.

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Claim 7 (original): An inspection apparatus as defined in claim 1, which further includes an insulative film disposed to cover approximately the entire front surface of said inspection chip.

Claim 8 (original): An inspection apparatus as defined in claim 1, wherein said package includes a through hole penetrating from the front surface to the rear surface of said package, and an external electrode provided at said rear surface, wherein said lead is electrically connected to said external electrode through said through hole.

Claim 9 (currently amended) An inspection apparatus ~~as defined in claim 1~~ comprising:
an inspection chip for inspecting a conductive pattern of a circuit board in a non-contact
manner;

an insulative package mounting said inspection chip thereon with allowing an inspection
surface of said inspection chip to be exposed out of said insulative package;

a chip-side bump electrode provided at each of electrode pads of said inspection chip;

a package-side bump electrode provided at a lead of said package;

an anisotropic conductor disposed to cover at least said chip-side bump electrode and said
package-side bump electrode; and

a conductor layer located on said anisotropic conductor and extending at least in the range
of said chip-side bump electrode to said package-side bump electrode, wherein said anisotropic
conductor is thermo-compression bonded in between said conductor layer and said chip-side bump

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electrode and in between said conductor layer and said package-side bump electrode, so as to electrically connect said chip-side bump electrode with said package-side bump electrode through said conductor layer, wherein an inspection signal applied to said conductive pattern ~~are~~ is detected through a coupling capacitance lying between said inspection chip and said conductive pattern.

Claim 10 (original): An inspection apparatus as defined in claim 9, wherein said inspection chip includes a plurality of sensor elements for detecting said inspection signal, wherein an image data for one pixel is generated base on one of said sensor elements.

Claim 11 (currently amended): A holder for holding an inspection apparatus including a packaged inspection chip for inspecting a conductive pattern of a circuit board in a non-contact manner, said holder comprising:

a holding table;

an elastic member provided at on the top surface of said holding table ~~and allowing said inspection apparatus to be placed thereon~~; and

a holding member mounted on said holding table ~~and having~~ , the holding member having a claw for defining the upper limit position of said inspection apparatus placed on said elastic member , wherein said inspection apparatus has a step-down portion arranged such that said inspection apparatus is engaged between said elastic member and said step-down portion.

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Claim 12 (original): A holder as defined in claim 11, wherein said claw is adapted to contact a part of said inspection apparatus so as to define said upper limit position.

Claim 13 (original): A holder as defined in claim 11, which further includes a probe mounted on said holding table and penetrating said elastic member to contact an electrode provided in said inspection apparatus, said probe being elastically displaceably mounted on said inspection apparatus.

Claim 14 (currently amended): A holder for holding an inspection apparatus including a packaged inspection chip for inspecting a conductive pattern of a circuit board in a non-contact manner, said holder comprising:

a holding table;

an elastic member fixed on the top surface of said holding table; and

an engaging member fixed on the top surface of said elastic member to retain said inspection apparatus, wherein said inspection apparatus has a step-down portion arranged such that said inspection apparatus is engaged between said elastic member and said step-down portion.

Claim 15 (currently amended): A holder for an inspection apparatus as defined in claim 14, wherein said holder is adapted to hold ~~an~~ said inspection apparatus with keeping said inspection apparatus in a slanted position, said inspection apparatus including a packaged inspection chip for inspecting a conductive pattern of a circuit board in a non-contact manner.

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Claim 16 (currently amended): A holder for an inspection apparatus including a packaged inspection chip for inspecting a conductive pattern of a circuit board in a non-contact manner, said holder comprising:

a holding table;

a plurality of probes provided in said holding table and supporting said inspection apparatus with bringing each tip of said probes into contact with an electrode of said inspection apparatus; and

a holding member mounted on said holding table and having a claw defining the upper limit position of said inspection apparatus placed on said elastic member, wherein each of said probe is elastically displaceably mounted on said inspection apparatus , wherein said inspection apparatus has a step-down portion arranged such that said inspection apparatus is engaged between said elastic member and said step-down portion.